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GB 0734002 A	EP 0657368 A2	EP 0482390 A1
US 4643314 A	US 4361232 A	US 3904030 A
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(54) Abstract Title

Pallet with removable or part-removable cover

(57) A pallet for storing collapsible fuel tanks comprises a support member e.g. a sledge 2 together with a removable or part-removable cover 4. The pallet is preferably constructed from polyethylene or polycarbonate. In preferred embodiments, the cover is either formed of one piece (4, Fig. 6) and is completely removable or is formed from two parts 6, 8 which slide along guides 20 on the support member. The support member is preferably constructed from one or more hollow sections which may be provided with openings to allow spilled fuel to pass into them and drainage arrangements for subsequent draining. In the form of a sledge, the support member comprises two hollow runners 28, 30 connected across the top 32. The sides of the runners may be provided with openings 12 to allow four way fork lift access, hollow beams 10 extending between the runners for reinforcement. The ends of the runners are preferably angled 17 to allow the sledge to be pulled more easily across the ground. Other features include the provision of towing eyes 14, quick release catches for the cover 16, an access hatch in the cover (22, Fig. 6) and locating means (34, Fig. 6) on the upper surface of the cover to enable the pallets to be stacked.

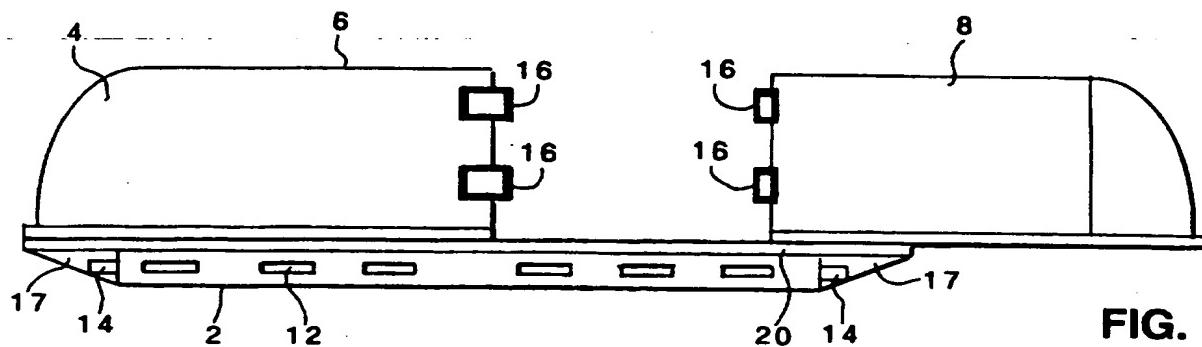


FIG. 1

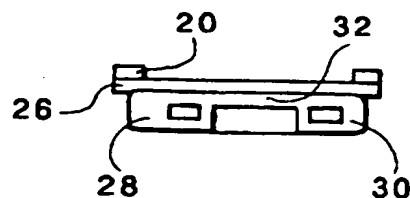


FIG. 5

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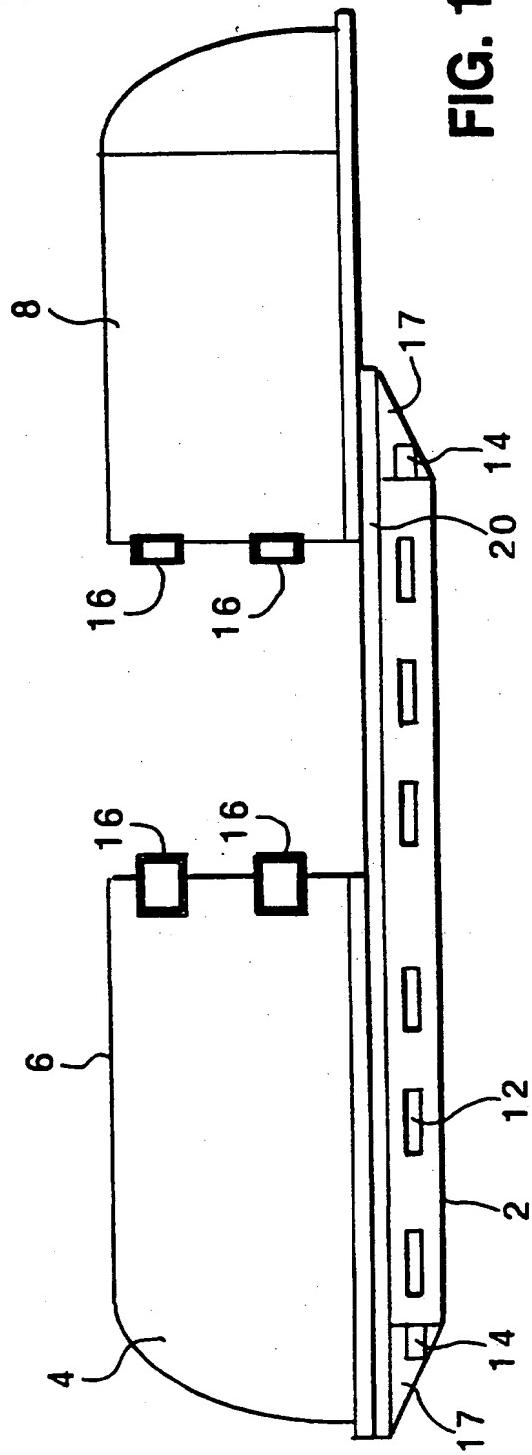


FIG. 1

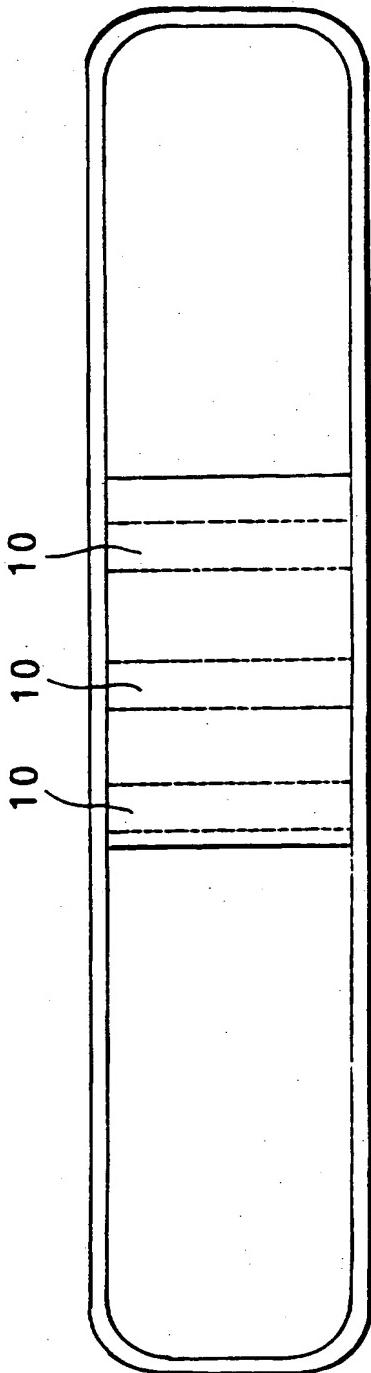


FIG. 2

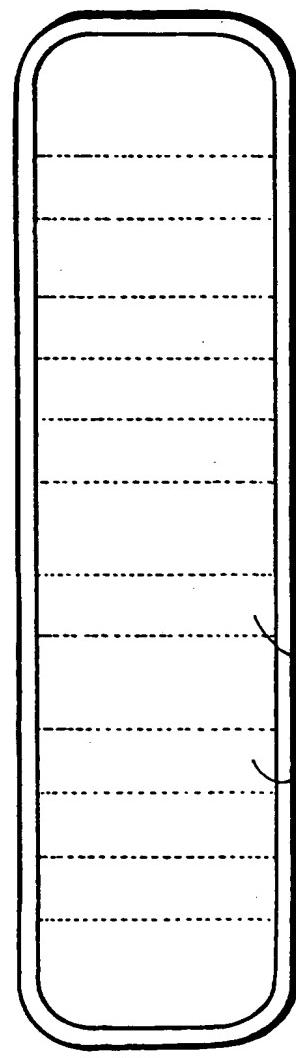
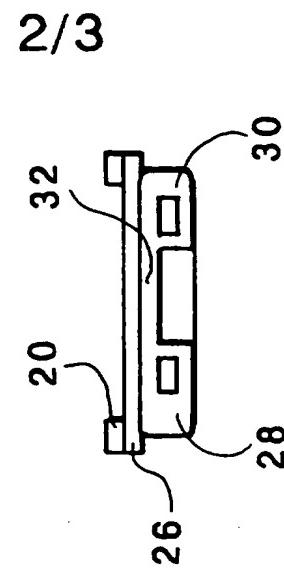


FIG. 4



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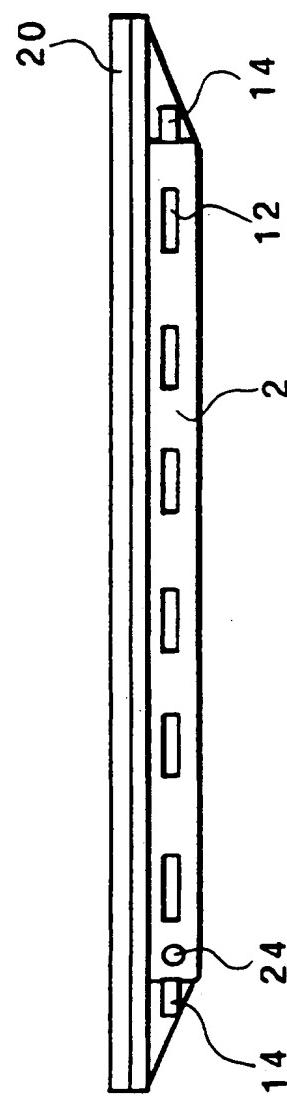


FIG. 3

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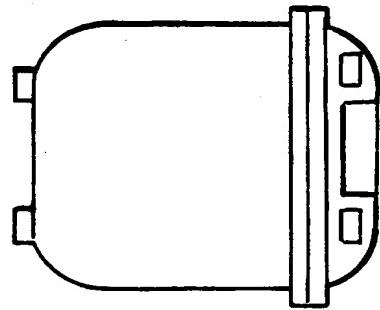


FIG. 8

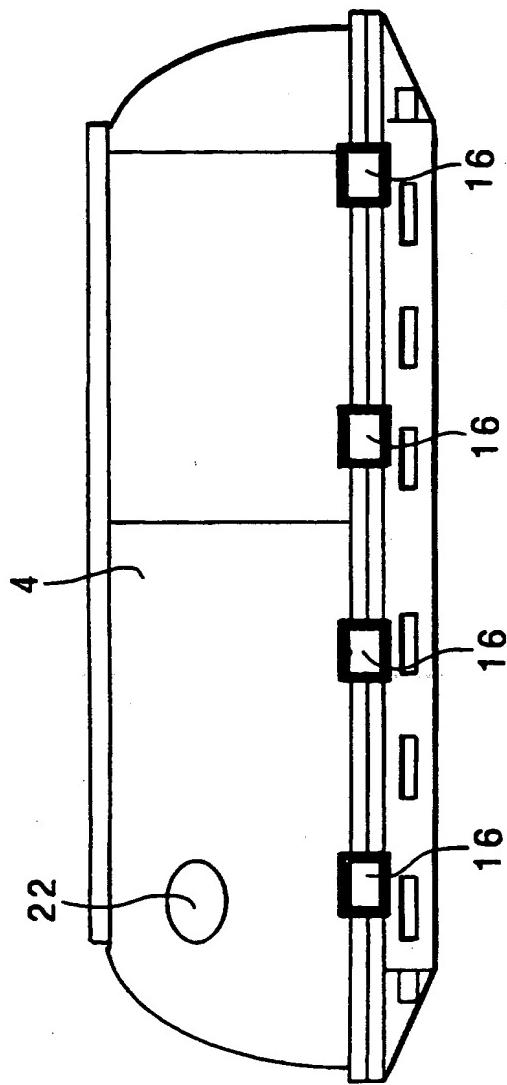


FIG. 6

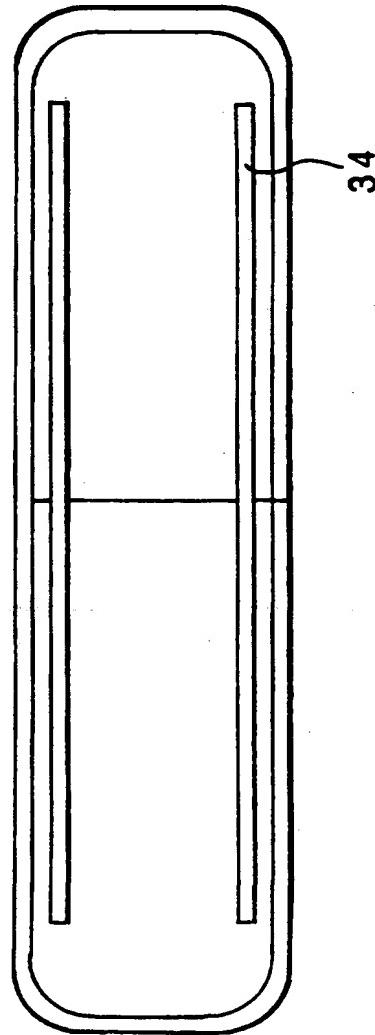


FIG. 7

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DESCRIPTION

COLLAPSIBLE TANK CRATE

The present invention relates to a crate or device for the storage of a collapsible fuel tank.

Collapsible fuel tanks are provided e.g. for storage of fuel at temporary locations, e.g. forward air fields in war situations, and for transport of fuel to and from such locations. Such a collapsible fuel tank requires some form of storage to protect the tank and to enable it to be transported successfully.

Up to this time such collapsible fuel tanks have been stored in wooden boxes for transport.

According to the present invention there is provided a device for storage of a collapsible fuel tank, comprising a support member (e.g. a sledge) on which the collapsible fuel tank may be seated, together with a removable or part-removable cover.

The support member/sledge and/or cover is/are preferably made from plastics material. Any suitable plastics material may be used e.g. polyethylene or polycarbonate. Polyethylene is currently the preferred material.

When made from plastics material the support member/sledge and/or cover is/are made by rotational moulding, although other methods can be used e.g. injection moulding or vacuum moulding.

Preferably the support member/sledge comprises a

hollow section or sections and more preferably comprises a pair of hollow runner sections connected at the top. A separate member may be placed between the support member or sledge and the fuel tank when in position to provide additional support for the tank.

The support member when comprising a hollow section or sections includes one or more holes in the upper surface to allow fuel spilled from the fuel tank to pass into the hollow section or sections. When a separate member is placed between the support member or sledge and the tank, the separate member includes one or more holes corresponding to the hole(s) in the support member or sledge.

Preferably at least one end is at an obtuse angle to assist in pulling the sledge across the ground. More preferably both ends are angled to the base to allow the sledge to be operated in both directions.

Preferably the sides of the sledge include openings to enable the sledge to be manoeuvred by use of forklift trucks and/or sling. The openings preferably open into hollow beams extending across the support member or sledge to provide strength to the support member or sledge.

In use, fuel is likely to be spilled from the tank into the base of the support member or sledge, and it is therefore preferable that the sledge includes drainage arrangements to enable any fuel lodged in the

base of the sledge to be drained away. Such drainage arrangements preferably comprise two drain cocks one at each end on opposite sides. The support member or sledge preferably also includes towing eyes (preferably two at each end) to enable it to be towed to an appropriate location.

In one embodiment the removable or part-removable cover preferably comprises two separate parts one or both of which are mounted on slides built into the sledge. When the removable part or parts is/are slid into position, they cover the collapsible fuel tank. Preferably quick release catches are provided to hold the two parts together in closed position.

In another embodiment the cover is removable as a whole in a single piece.

Preferably the cover includes strengthening hoops (preferably 4) e.g. of metal to give the design strength and to allow a number of devices of the invention to be stacked one on top of the other.

Preferably strengthening ribs are provided in the support member or sledge e.g. in the form of hollow beams which terminate in the openings in the side of the support member or sledge to remove the tines of a fork lift truck.

In preferred embodiments, a hatch is provided in the cover members in order to provide access, e.g. for inspection or for introduction of a hot air duct in the

event that the apparatus is being used in a cold climate and it is necessary to introduce hot air to the inside of the device in order to prevent the fuel from freezing.

Preferably the device is such that a series of such devices may be stacked one on another and to this end it is preferred that the upper surface of the cover member includes locating means (e.g. in this form of two projecting longitudinal rails) for cooperation with the base of another such device.

Preferably the device of the invention is no more than 3.25m in length, no more than 1.47m wide and no more than 0.97m high.

The invention will now be further described by way of example with reference to the accompanying drawings in which:-

Figure 1 shows a tank crate in accordance with one embodiment of the invention;

Figure 2 is a top view of the crate of Figure 1;

Figure 3 is a side view of modified sledge;

Figure 4 is a top view of the sledge of Figure 3;

Figure 5 is an end view of the sledge of Figure 3;

Figure 6 is a side view of a second modification;

Figure 7 is a top view of the device of Figure 6; and

Figure 8 is an end view of the device of Figure 6.

Referring now to the drawings, and in particular to Figures 1 and 2, there is shown a device for the storage of a collapsible fuel tank which comprises a sledge portion 2 and a cover portion 4. The sledge portion includes a pair of hollow longitudinal sections similar to those in the devices of Figs. 3, 4 and 5, which act as runners. The hollow sections are connected at the top to form a support for the fuel tank (not shown). The cover portion is in two parts 6 and 8 and the two parts are slidably mounted upon the sledge portion 2 by way of slides 20. The sledge portion includes hollow strengthening ribs 10 which open at each end into slots 12 in the sides of the sledge portion to allow access for a forklift truck.

A pair of towing eyes 14 is provided at each end of the sledge to enable the sledge to be towed into position.

The two halves of the cover portion 4 may be slid into the open position (see cover half 8) or into the closed position (see cover half 6). When both halves are in the closed position they may be locked by means of quick release latches 16. The sledge portion 2 and the cover portion 4 are both made from a suitable plastics material e.g. polyethylene or polycarbonate. The ends 17 of the sledge are at an obtuse angle to the base to facilitate towing of the device by sliding.

Referring now to Figures 3, 4 and 5, the sledge

and 2 but a pair of drain cocks 24 is provided (only one can be seen as the other one is on the far side) to allow the inside of the sledge to be drained periodically of any fuel which lodges there. A separate support member 26 is provided on top of the sledge portion 2, and the upper surface of the sledge, and the separate support member 26 are each provided with holes (not shown) to allow fuel spilled from a fuel tank to enter the longitudinal hollow sections 28,30 of the sledge 2. The section 28,30 are connected by a bridging section 32.

Referring now to Figures 6, 7 and 8, there is shown a modified arrangement in which the cover 4 is formed as a single member which can be lifted from the sledge 2. A series of quick release catches 16 are provided to enable the cover to be locked into position on the sledge. In this arrangement a releasably closeable hatch 22 is provided. This hatch 22 may be used either for inspection or for any other means, e.g. connecting a hot air duct to allow hot air to be pumped into the inside of the tank crate.

The cover in this embodiment is provided with locating guides 34 to enable a similar device as that shown to be stacked on top of the device of Figs. 6,7 and 8.

Again the sledge and cover are made from any suitable plastics material.

CLAIMS

1. A device for storage of a collapsible fuel tank, comprising a support member (e.g. a sledge) on which the collapsible fuel tank may be seated, together with a removable or part-removable cover.
2. A device as claimed in claim 1, in which the support member/sledge and/or cover is/are made from plastics material.
3. A device as claimed in claim 2, in which the plastics material is polyethylene or polycarbonate.
4. A device as claimed in any one of the preceding claims, in which the support member/sledge comprises a hollow section or sections.
5. A device as claimed in claim 4, in which the support member/sledge comprises a pair of hollow runner sections connected at the top.
6. A device as claimed in claim 4 or 5, in which a hollow section or sections includes one or more holes in the upper surface to allow fuel spilled from the fuel tank when in position, to pass into the hollow section or sections.
7. A device as claimed in any one of the preceding claims, in which a separate member is placed between the support member or sledge and the fuel tank when in position to provide additional support for the tank.
8. A device as claimed in claim 6 and 7, in which

the separate member includes one or more holes corresponding to the hole(s) in the support member or sledge.

9. A device as claimed in any one of the preceding claims, in which at least one end is at an obtuse angle to assist in pulling the sledge across the ground.

10. A device as claimed in claim 9, in which both ends are angled to the base to allow the sledge to be operated in both directions.

11. A device as claimed in any one of the preceding claims, in which the sides of the sledge include openings to enable the sledge to be manoeuvred by use of forklift trucks and/or sling.

12. A device as claimed in claim 11, in which the openings open into hollow beams extending across the support member or sledge to provide strength to the support member or sledge.

13. A device as claimed in any one of the preceding claims, in which the support member or sledge includes drainage arrangements to enable any fuel lodged in the base of the sledge during use to be drained away.

14. A device as claimed in any one of the preceding claims, in which the support member or sledge includes towing eyes to enable it to be towed to an appropriate location.

15. A device as claimed in any one of the preceding claims, in which the removable or part-removable cover comprises two separate parts one or both of which are mounted on slides built into the sledge.

16. A device as claimed in claim 15, in which quick release catches are provided to hold the two parts together in closed position.

17. A device as claimed in any one of claims 1 to 14, in which the cover is removable as a whole in a single piece.

18. A device as claimed in any one of the preceding claims, in which the cover includes strengthening hoops to give the device strength and to allow a number of devices of the invention to be stacked one on top of the other.

19. A device as claimed in any one of the preceding claims, in which strengthening ribs are provided in the support member or sledge.

20. A device as claimed in any one of the preceding claims, in which a hatch is provided in the cover in order to provide access.

21. A device as claimed in any one of the preceding claims, in which the upper surface of the cover member includes locating means for cooperation with the base of another such device, so that a series of such devices may be stacked one upon another.

22. A device substantially as hereinbefore described with reference to and as illustrated in any one of the accompanying drawings.



The
Patent
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II.

Application No: GB 9700400.6
Claims searched: 1-22

Examiner: Matt Jefferson
Date of search: 11 March 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): B8H (HLA, HLB, HLX, HQC, HQJ, HRB); B8P (PL3).

Int Cl (Ed.6): B65D 19/00, 19/02, 19/04, 19/06, 19/18, 88/12.

Other: Online: WPI.

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 0734002	(SHARP & KAYE) See whole document.	1, 9, 10, 11, 17 & 21.
X	EP 0657368	(AMERICAN CYANAMID CO.) See column 3, line 28 to column 6 line 17 and figures 1 and 2.	1, 2, 3, 7, 17 & 21.
X	EP 0482390	(ELVIN-JENSEN) See whole document.	1, 2, 3, 4, 5 & 11.
X	US 4643314	(KIDD) See column 2, line 15 to column 3, line 26 and figures 1 to 4.	1, 2, 19 & 21.
X	US 4361232	(OLMSTED) See whole document.	1, 7, 11 & 17.
X	US 3904030	(REPP) See whole document.	1, 2, 3, 7 & 17.
X	US 3828964	(BONNOT) See whole document.	1, 2, 11 & 21.

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